was no significant change in water quality between the two surveys (July 2011 and April 2012).

A20. Molecular analyses on red algal parasite growing on *Gracilaria salicornia* (Gracilariaceae, Rhodophyta) from Malaysia

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Samples of *Gracilaria salicornia* (C. Agardh) Dawson with red algal parasites growing on the thalli were collected from 10 sites along the coastline of Malaysia. Comparative study of several genetic markers from different genomes had been conducted to elucidate the relationship of this host-parasite association. The close relationship between the algal host and its parasite from different habitats was confirmed by phylogenies inferred from genetic markers of nuclear origin, the LSU gene and internal transcribed spacer (ITS) region. Partial LSU gene was successfully used to resolve the relationship between *G. salicornia* and its parasite. Interpopulation divergence based on ITS sequence suggests that the evolution of this parasite from *G. salicornia* is occurring at different spatial and temporal dimensions. Data from organellar DNA indicates that the parasite has evolved directly from its current host. The identical sequences of plastid *rbc*L and mitochondrial *cox*1 gene obtained for the association suggest that the parasite had derived organelles from its host via 'host cellular transformation' for development. Sequence analyses on the plastid and mitochondrial markers, coupled with morphological features including the presence of tubular filaments linking gonimoblasts and pericarp in cystocarps, cystocarp cavity partially filled by gonimoblast, and deep spermatangial conceptacles clearly showed that the parasite is *sensu stricto* a member of *Gracilaria* along with its host. This parasitic taxon growing on *G. salicornia* is characterised by the lack of unique plastid and mitochondrial DNA, while retaining its nuclear DNA.